

REMARKS / ARGUMENTS

To facilitate discussion and reference to relevant portions of the present application, as-filed, citations to the present specification hereinafter will refer to the published version of the present application, i.e., U.S. Patent Application Publication No. US 2004/0042952 (hereinafter referred to as "Present Specification").

Status of Claims

Claims 5-6, 8-13, 22-33 and 35 remain pending, are under substantive examination, and have been rejected, as discussed in further detail hereinafter.

Claim 7 has been cancelled by the foregoing amendments.

Claims 14-17, 36-47 and 55-66 have been cancelled since they were previously withdrawn from examination by election filed June 2005.

Claims 1-4, 18-21 34 and 48-54 were previously cancelled by preliminary amendment at the time of filing this divisional patent application.

Claims 5, 8, 9, 10, 13, 22, 23, 24 and 35 have been amended by the foregoing amendments.

More particularly, to more clearly recite the features of the present invention, all of the features recited in original Claim 7 have been incorporated into independent Claim 5. Support for this amendment is found in original Claim 7, as well as in the Present Specification, near the end of paragraph [0053] and Figures 2 and 16. Claim 7 has been cancelled. Since each of Claims 8 and 10 originally depended from cancelled Claim 7, each of Claims 8 and 10 has been amended to depend from amended independent Claim 5. Claim 9 has been amended simply to correct typographical errors.

As discussed further hereinbelow, dependent Claim 13 has been amended to address the Examiner's rejections under 35 U.S.C. § 112. Support for these amendments is found in the Present Specification in paragraph [0049] (for "LAD" and "EHD") and in paragraph [0061] (for "CRV").

Independent Claim 22 has been amended to clarify that the "internal insulation forms an interior surface within said one or more of said sections a)-e)" and to remedy

an antecedent basis issue (no antecedent basis for “the apparatus sections”, therefore changed to “said sections a)-e”). Claims 23 and 24 have each been amended to clarify that the conical interior surface of each of the inlet and outlet transition sections is actually formed, respectively, by internal insulation positioned therein. Support for the amendment to independent Claim 22, which adds the additional feature relating to the internal insulation forming an interior surface, as well as the amendments to dependent Claims 23 and 24, is found in the Present Specification at paragraph [0064] and Figure 20.

Lastly, independent Claim 35 has been amended to more clearly recite that the internal insulation in the inlet transition section “forms a conical interior surface within said inlet transition section”. Support for this amendment is found in the Present Specification in paragraphs [0053] and [0064] and Figures 2, 16 and 20.

Claim Rejections Under 35 U.S.C. § 112, second paragraph

On page 3 of the Office Action, Claim 13 has been rejected, under 35 U.S.C. § 112, second paragraph because the Examiner believes that the terms “CRV,” “LAD,” and “EHD” are unclear and indefinite.

It is respectfully submitted that the terms “CRV,” “LAD,” and “EHD” are not unclear or indefinite because they are merely abbreviations whose meaning is clearly defined in the Present Specification in paragraphs [0049] and [0061] and, accordingly, would be well understood by persons of ordinary skill in the relevant art. Nonetheless, Claim 13 has been amended to replace each of these abbreviations with the full-length apparatus name for each from the specification. More particularly, the term “CRV” has been replaced by the term “flow straightener comprising a rotation vane”, the term “LAD” has been replaced by the term “large angle diffuser”, and the term “EHD” has been replaced by the term “elliptical head diffuser”.

It is believed that the aforesaid amendments adequately address this rejection of Claim 13. In view of the aforesaid amendments 13 and the foregoing explanation, withdrawal of this rejection of Claim 13 is hereby respectfully requested.

Claim Rejections Under 35 U.S.C. §§ 102 and 103

On page 2 of the Office Action, Claims 5-13 and 22-33 have been rejected, under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as being obvious over Humble et al., US Patent No. 5,063,028. Similarly, on page 3 of the Office Action, Claims 5, 6, 12, 13, 22-33 and 35 have been rejected, under 35 U.S.C. § 102(e) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as being obvious over DeCourcy et al., US Patent No. 6,221,327. Applicants respectfully traverse these rejections for the following reasons.

Neither Humble et al nor DeCourcy et al. anticipate or make obvious the present invention as recited in each of amended independent Claims 5, 22 and 35 because neither of these references disclose or suggest the feature of the present invention whereby internal insulation comprising refractory ceramic fiber forms an interior surface, let alone a conical interior surface within transition sections of the apparatus.

As explained in the Present Specification, paragraphs [0003] and [0053], using refractory ceramic fiber material as internal insulation to form an interior surface within transition sections of apparatus used for high-temperature industrial processes resolves problems with previously-used heavy and brittle refractories. Furthermore, the importance of providing the internal insulation in a shape whereby a conical interior surface is formed within the transition sections, regardless of the configuration of said transition sections (which, for example, might be dome-shaped), to assist in creating and maintaining a laminar fluid flow regime within the transition sections, is discussed in the Present Specification, in paragraphs [0049] and [0064].

Humble et al. discloses a vessel for regenerating catalyst, rather than conducting high-temperature industrial processes, wherein the vessel is lined with refractory lining 457 which forms an interior surface within the vessel, which teaches away from the present invention. Ceramic fiber 465, 467 is disclosed by Humble et al. merely as insulating, compressible filler for spaces created between the interior vessel wall and an internal cone and/or the refractory lining and/or the shell disposed within the vessel (see Humble, Figure 4 and Col. 4, lines 57-69 and Col. 5, lines 1-8). The ceramic fiber material taught in Humble et al. does not form an interior surface within the vessel at all (as in the present invention as recited in amended independent Claim 22), let alone a

conical interior surface within the vessel (as in the present invention as recited in each of amended independent Claim 5). Additionally, it is noted that the bulk fiber 465 would not withstand contact with laminar fluid flowing reactants which are contained by the apparatus of the present invention. Thus, Humble et al. neither discloses, nor in any way suggests, the use of refractory ceramic fiber to form an interior surface within transition sections of apparatus for high-temperature industrial processes. There is no motivation in either Humble et al. or the general knowledge of persons of ordinary skill in the art to replace refractory linings of such apparatus with refractory ceramic fiber to form an interior surface within the apparatus (as recited in amended independent Claim 22), let alone to form a conical interior surface (as recited in each of amended independent Claim 5).

It is believed that the present invention, as recited by each of amended independent Claims 5 and 22, is novel and unobvious and, therefore, patentable over Humble et al. Since each of remaining Claims 6, 8-13 and 23-33 depends, either directly or indirectly, from one of amended independent Claims 5 or 22, the subject matter of these claims is also believed to be patentable over Humble et al. Accordingly, withdrawal of the rejection of Claims 5-6, 8-13 and 22-33, based on the disclosure of Humble et al., is hereby respectfully requested.

DeCourcy et al. discloses use of a flow-through radiation shield 3 positioned proximate a catalyst bed, spanning the cross-section of the space within a reactor vessel, i.e., perpendicular to the fluid flow therethrough. It is respectfully submitted that the internal insulation of the present invention is entirely different from the radiation shield taught by DeCourcy et al. The radiation shield disclosed by DeCourcy et al. does not form an interior surface within the reactor vessel (as in the present invention recited in amended independent Claim 22), let alone a conical interior surface (as in the present invention recited in each of amended independent Claims 5 and 35), but rather it is a shield or barrier through which feed gases must pass before contacting the catalyst bed. Accordingly, the flow-through radiation shield of DeCourcy et al. is made of porous ceramics, ceramic foams and ceramic composites that are capable of allowing feed gases to pass through the shield (see DeCourcy et al., Figures 1 and 4, Col. 3, lines 32-36, and Col. 5, lines 43-48 and 61-67). The internal insulation of the

present invention is clearly not porous and is used to form and shape the interior surface of the transition sections of the apparatus recited and used in the present invention. As would be readily apparent to persons of ordinary skill in the art, based on the disclosure and claims of the present application and DeCourcy et al., the radiation shield of DeCourcy et al. would not be capable of the function performed by the internal insulation of the present invention which is to form and shape the interior surface of the transition sections of the apparatus and radiate heat from within the apparatus to the transition sections and, from there, to the ambient environment. Rather, the radiation shield of DeCourcy et al. transfers heat from the reaction zone to the reactants flowing through the radiation shield (in other words, the reactants are pre-heated as they pass through the radiation shield). In view of the foregoing discussion and explanation it is respectfully submitted that there is no disclosure or motivation, in either DeCourcy et al. or the general knowledge of persons of ordinary skill in the relevant art, to utilize a radiation shield, such as taught by DeCourcy et al., to replace the insulating refractory previously used with apparatus for high-temperature industrial processes, as in the present invention recited in amended independent Claims 5, 22 and 35.

It is believed that the present invention, as recited by each of amended independent Claims 5, 22 and 35, is novel and unobvious and, therefore, patentable over DeCourcy et al. Since each of remaining Claims 6, 8-13 and 23-33 depends, either directly or indirectly, from one of amended independent Claims 5 or 22, the subject matter of these claims is also believed to be patentable over DeCourcy et al. Accordingly, withdrawal of the rejection of Claims 5-6, 8-13, 22-33 and 35, based on the disclosure of DeCourcy et al., is hereby respectfully requested.

In view of the foregoing amendments and remarks, it is believed that the present invention, as recited in amended independent Claims 5, 22 and 35, as well as dependent Claims 6, 8-13 and 22-33 which depend directly or indirectly therefrom, is novel and unobvious and, therefore, patentable over both Humble et al and DeCourcy et al. Thus, re-examination and allowance of Claims 5-6, 8-13, 22-33 and 35, are hereby respectfully requested.

Conclusion

A fee of **\$450** is believed to be due in connection with the submission of this Amendment, since it is being submitted within two months after the originally set due date for response to the Office Action. This \$450 fee is addressed by the accompanying Petition for Extension, which authorizes this \$450 to be charged to **Deposit Account No. 18-1850**.

No additional fees are believed to be due in connection with the submission of this Amendment. If, however, any such fees, including petition and extension fees, are due, the Commissioner is hereby authorized to charge such fees to **Deposit Account No. 18-1850**. In the meantime, please direct all future correspondence relating to the present application to the undersigned attorney.

Date: **November 30, 2005**
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Respectfully Submitted,



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